

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of reusing an exhaust gas in a polymer production plant in order to reuse an inert gas within said exhaust gas discharged from a polymer production plant, which comprises a step of adsorbing and removing a polymerization solvent and polymerization monomers contained in said inert gas by passing, through an adsorbent layer, wherein said adsorbent layer is formed from:

~~(1) plural layers, wherein each single layer of said plural layers is of the same or different kind of said at least one adsorbent selected from the group consisting of silica gel and synthetic zeolite, or~~

~~(2) plural layers, wherein each of a single layer of silica gel comprises plural layers different in pore diameter laminated in the order of large to small pore diameters in the direction of flow of the exhaust gas,~~

a hydrophobic silica gel, hydrophilic silica gel and synthetic zeolite laminated in the order in the direction of flow of the exhaust gas,

said exhaust gas containing said inert gas discharged from the polymer production plant, wherein said inert gas reaching a predetermined purity by removing the polymerization solvent and polymerization monomers in the step of adsorption and removal is reused in the polymer production plant.

2. (Original) The method of reusing an exhaust gas in a polymer production plant according to claim 1, wherein the polymer in the polymer production plant is an olefinic polymer.

3. – 5. (Cancelled)

6. (Previously Presented) The method of reusing an exhaust gas in a polymer production plant according to claim 1 or 2, wherein in the step of adsorption and removal, water is also removed.

7. (Previously Presented) The method of reusing an exhaust gas in a polymer production plant according to claim 1 or 2, which comprises a step of desorbing and removing, from the adsorbent, the polymerization solvent and polymerization monomers adsorbed onto the adsorbent in the adsorbent layer by depressurization.

8. (Previously Presented) The method of reusing an exhaust gas in a polymer production plant according to claim 1 or 2, which comprises a step of desorbing and removing, from the adsorbent, the polymerization solvent and polymerization monomers adsorbed onto the adsorbent in the adsorbent layer by depressurization while introducing a purge gas.

9. (Previously Presented) The method of reusing an exhaust gas in a polymer production plant according to claim 8, wherein the purge gas is an inert gas reaching a predetermined purity by removing the polymerization solvent and polymerization monomers in the step of adsorption and removal.

10. (Previously Presented) The method of reusing an exhaust gas in a polymer production plant according to claim 1 or 2, wherein the inert gas reaching a predetermined purity by removing, with the adsorbent layer, the polymerization solvent and polymerization monomers contained in the inert gas is refluxed to the polymer production plant in order to use the inert gas in the polymer production plant.

11. (Previously Presented) The method of reusing an exhaust gas in a polymer production plant according to claim 1 or 2, wherein the adsorbent layer is pressurized with an inert gas holder drum from a depressurized state in the desorption step to an operational pressurized state in the adsorption step.

12. (Previously Presented) The method of reusing an exhaust gas in a polymer production plant according to claim 1 or 2, wherein at least one kind of adsorbent used in the adsorbent layer is formed from the adsorbent not pre-coated with hydrocarbons.

13. (Cancelled)